

IN THE CLAIMS

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Claim 23 (original) A fixed length data processing apparatus for processing fixed length data for asynchronous communication comprising:

a request generating unit being able to generate an execution request for a continuity test processing in order to confirm a continuity state in said asynchronous communication; and

a continuity test processing unit for generating fixed length data for a continuity test when receiving said execution request from said request generating unit, transmitting and receiving said fixed length data to and from another fixed length data processing apparatus via said transmitting apparatus to execute said continuity test processing, and notifying a result of said continuity test processing said request generating unit.

Claim 24 (original) The fixed length data processing apparatus according to claim 23, wherein said continuity test processing unit performs said continuity test processing according to a process timing in synchronization with a length of said fixed length data.

Claim 25 (currently amended) The fixed length data processing apparatus according to claim 23, wherein when transmission route identification information on transmission routes of said fixed length data is set in a plurality of said fixed length data

handled by a plurality of transmitting apparatus, said continuity test processing unit performs said continuity test processing commonly to said transmission ~~routes~~ routes on the basis of said transmission route identification information.

Claim 26 (original) The fixed length data processing apparatus according to claim 23, wherein when said fixed length data is handled by a predetermined transmitting apparatus, said continuity test processing unit performs said continuity test processing correspondingly to said transmitting apparatus on the basis of apparatus identification information unique to said transmitting apparatus.

Claim 27 (original) The fixed length data processing apparatus according to claim 23, wherein when fixed length data for the continuity test received from said another fixed length data processing apparatus is fixed length data having been generated by its own fixed length data processing apparatus requesting to be looped back, looped back by said another fixed length data processing apparatus and received, said continuity test processing unit notifies said request generating unit that said continuity state is normal as a result of said continuity test processing.

Claim 28 (original) The fixed length data processing apparatus according to claim 27, wherein when fixed length data for a continuity test received from another fixed length data processing apparatus is data having been generated in said another fixed length data processing apparatus requesting to be looped back, said continuity test

processing unit loops back said fixed length data to said another fixed length data processing apparatus.

Claim 29 (original) The fixed length data processing apparatus according to claim 28, wherein said requesting generating unit generates, in response to said execution request, setting data for the continuity test processing including at least generating data necessary to generate fixed length data for said continuity test and confirming data necessary to confirm contents of fixed length data for the continuity test received from another fixed length data processing apparatus; and

wherein said continuity test processing unit comprises:

an interface unit for receiving said setting data from said request generating unit;

a setting data holding unit for holding said setting data received by said interface unit;

a continuity testing data generating process unit for generating fixed length data for the continuity test on the basis of said generating data in said setting data holding unit when receiving said execution request from said request generating unit, and transmitting said fixed length data to said another fixed length data processing apparatus;

a confirming process unit for confirming at least whether fixed length data for said continuity test is loopback data that is fixed length data having been generated in said continuity testing data generating process unit requesting to be looped

back, looped back by said another fixed length data processing apparatus and received, or loopback requesting data having been generated in said another fixed length data processing apparatus requesting to be looped back, on the basis of said confirming data in said setting data holding unit when receiving said fixed length data for a continuity test from said another fixed length data processing apparatus;

a notifying process unit for notifying said request generating unit via said interface unit that said continuity state is normal as a result of said continuity test processing when said confirm processing unit confirms that the received fixed length data for a continuity test is said loopback data; and

a loopback processing unit for performing a loopback processing to loop back said fixed length data for a continuity test to another fixed length data processing apparatus as loopback data when said confirming processing unit confirms that said received fixed length data for a continuity test is said loopback requesting data.

Claim 30 (original) The fixed length data processing apparatus according to claim 29, wherein said setting data holding unit holds each of said data correspondingly to transmission route identifying information on fixed length data set in said fixed length data for a continuity test.

Claim 31 (original) The fixed length data processing apparatus according to claim 30, wherein said setting data holding unit is configured with a dual port RAM having at least ports in two systems, said continuity testing data generating process unit reads

said generating data through a port in either system of said dual port RAM, and said confirming process unit reads said confirming data through a port in the other system of said dual port RAM.

Claim 32 (original) The fixed length data processing apparatus according to claim 29, wherein said continuity test processing unit comprises a count data holding unit for holding count data counted up in a predetermined cycle when fixed length data for a continuity test requesting to be looped back generated by said continuity testing data generating unit is transmitted, said confirming process unit monitors said count data in said count data holding unit to confirm whether said fixed length data for a continuity test generated by said continuity testing data generating unit is received from said another fixed length data processing apparatus within a predetermined time or not, and said continuity testing data generating unit re-generates fixed length data for a continuity test when said confirming process unit confirms that said fixed length data for a continuity test is not received within said predetermined time.

Claim 33 (original) The fixed length data processing apparatus according to claim 32, wherein said confirming process unit confirms the number of times of implementation of said re-generating process by said continuity testing data generating unit, and said notifying process unit notifies said request generating unit that said continuity state is abnormal as a result of said continuity test when said confirming process unit confirms that the number of times of implementation of said re—generating process reaches a predetermined number of times.

Claim 34 (original) The fixed length data processing apparatus according to claim 33, wherein said request generating unit notifies of said predetermined number of times said confirming process unit.

Claim 35 (original) The fixed length data processing apparatus according to claim 32, wherein said count data holding unit holds said count data in the same address region as an address region in which at least said confirming data is held in said setting data holding unit, and said confirming process unit reads said confirming data and said count data by designating an address region common to said setting data holding unit and said count data holding unit to perform said confirming process on the basis of each of said confirming data and said count data.

Claim 36 (original) The fixed length data processing apparatus according to claim 32, wherein said setting data holding unit holds said count data as a combination of said generating data and said confirming data.

Claim 37 (original) The fixed length data processing apparatus according to claim 30, wherein said setting data holding unit holds process state management data for managing a process state of said continuity test processing correspondingly to said transmission route identification information, and said continuity testing data generating unit, said confirming process unit, said notifying process unit and said loopback

processing unit perform said processing separately on each of a plurality of transmission routes on the basis of said transmission route identification information set in received fixed length data for a continuity test and said process state management data in said setting data holding unit.

Claim 38 (original) The fixed length data processing apparatus according to claim 37, wherein said setting data holding unit holds generation waiting display data representing a waiting state for said fixed length data for a continuity test as said process state management data; and

wherein said continuity testing data generating process unit comprises a generation waiting identification information retrieving unit for retrieving plural kinds of transmission route identification information in which said generation waiting display data is held in said setting data holding unit, and a transmission route identification information holding unit for holding plural kinds of transmission route identification information retrieved by said generation waiting identification information retrieving unit to continuously generate fixed length data for a continuity test for a plurality of transmission routes on the basis of said plural kinds of transmission route identification information held in said transmission route identification information holding unit.

Claim 39 (original) The fixed length data processing apparatus according to claim 29, wherein said continuity testing data generating process unit sets at least time data about a generate time of said fixed length data in said generated fixed length data for a

continuity test and writes said time data as a part of said confirming data in said setting data holding unit; and

wherein when the same time data as said time data written in said setting data holding unit is set in said fixed length data for a continuity test received from said another fixed length data processing apparatus, said confirming process unit confirms that said fixed length data for a continuity test is data having been looped back by said another fixed length data processing apparatus and received.

Claim 40 (original) The fixed length data processing apparatus according to claim 29, wherein said request generating unit gives a transfer trigger to said interface unit in order to generate said setting data for each of transmission routes of a plural kinds of fixed length data that are objects of a continuity testing process and transmit said setting data to said interface unit or read said setting data from setting data holding unit;

wherein said confirming process unit collectively reads said setting data from said interface unit and writes said setting data in said setting data holding unit, or collectively reads said setting data from said setting data holding unit and sends said setting data to said interface unit with said transfer trigger to said interface unit as an opportunity.

Claim 41 (original) The fixed length data processing apparatus according to claim 40 further comprising a register for holding said setting data from said request generating unit to be held in said setting data holding unit or said setting data read out from said

setting data holding unit commonly to transmission route identification information set in said fixed length data for a continuity test;

wherein said confirming process unit comprises an address generating unit for generating a part of an address showing a position in said setting data holding unit in which said setting data held in said register is written or a position in said setting data holding unit from which said setting data is read out with said transfer trigger as an opportunity; and

wherein said confirming process unit writes said setting data in said setting data holding unit or reads said setting data from said setting data holding unit according to an address which is a combination of a part of an address generated by said address generating unit and an address set as a remaining part of said address by said request generating unit.

Claim 42 (original) The fixed length data processing apparatus according to claim 41, wherein said interface unit inhibits an access from said request generating unit while said setting data is written from said register in said setting data holding unit.

Claim 43 (original) The fixed length data processing apparatus according to claim 29, wherein said fixed length data processing apparatus comprises an error detecting unit for detecting an error in said setting data from said request generating unit, and a data correcting unit for correcting said error when said error detecting unit detects said

error in said setting data.

Claim 44 (original) The fixed length data processing apparatus according to claim 29 further comprising an inserting unit for inserting said loopback data to be looped back to said another fixed length data processing apparatus in a loopback processing by said loopback processing unit in an empty region in a fixed length data flow toward said another fixed length data processing apparatus.

Claim 45 (original) The fixed length data processing apparatus according to claim 44, wherein said inserting unit comprises an input disconnection state detecting unit for detecting an input disconnection state of said fixed length data flow, and an alarm generating unit for periodically generating alarm data for notifying of a fault state said another fixed length data processing apparatus when said input disconnection state detecting unit detects said input disconnection state;

wherein when said input disconnection state detecting unit detects said input disconnection state, said inserting unit inserts said loopback data in an empty region in an alarm data flow periodically generated by said alarm generating unit.

Claim 46 (original) The fixed length data processing apparatus according to claim 44, wherein said inserting unit comprises a loopback data holding unit for holding said loopback data, and said loopback data holding unit holds only a part of data among said loopback data.

Claim 47 (original) The fixed length data processing apparatus according to claim 46, wherein said inserting unit generates additional data to be added other than said part of data not held in said loopback data holding unit at the time of the insertion to add said additional data to said part of data held in said loopback data holding unit at the time of the insertion.

Claim 48 (original) The fixed length data processing apparatus according to claim 46, wherein when said inserting unit is notified by said continuity test processing unit that said loopback data is not data to be loopedback to said another fixed length data processing apparatus, said inserting unit cancels said data held in said loopback data holding unit.

Claim 49 (original) The fixed length data processing apparatus according to claim 44, wherein said inserting unit comprises an intervening circuit for intervening insert timings for said loopback data and said fixed length data for insertion when fixed length data for insertion to be inserted to an empty region in said fixed length data flow exists other than said loopback data for a continuity test.

Claim 50 (original) The fixed length data processing apparatus according to claim 49, wherein said intervening circuit gives the highest priority to said insert timing for said loopback data.

Claim 51 (original) The fixed length data processing apparatus according to claim 44, wherein when said fixed length data for a continuity test is handled by a predetermined transmitting apparatus, said inserting unit separately performs said inserting process corresponding to said transmitting apparatus on the basis of apparatus identification information unique to said transmitting apparatus.

Claim 52 (original) The fixed length data processing apparatus according to claim 51, wherein said inserting unit performs the next inserting process on the basis of apparatus identification information different from said apparatus identification information by which said inserting process has been performed in the last occasion.

Claim 53 (original) The fixed length data processing apparatus according to claim 51, wherein said inserting unit inhibits said inserting process correspondingly to said transmitting apparatus.